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THE DEVELOPMENT OF THE CARTOGRAPHY OF AMERICA UP TO THE YEAR 1570.

BY

DR. SOPHUS RUGE.

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THE DEVELOPMENT OF THE CARTOGRAPHY OF AMERICA UP TO THE YEAR 1570.[1]

By Dr. Sophus Ruge.

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The discovery of America and the geographical researches on that continent may be regarded as the initial period of the era of discovery. In order to intelligently trace the gradual dawning of a new world upon the geographical chart and, at the same time, to compare the discoveries made by the several pilots and to estimate briefly their value from a scientific point of view, I have selected the medium of a collection of thirty-two maps, upon which are represented the progress of discovery from decade to decade.

This cartographical evolution ends with the year 1570, for in that year first appeared Ortelius's Theatrum Orbis, the earliest modern atlas, by which, in numerous editions and in various languages, we have an easily accessible collection of new charts. Previous to that publication, exclusive of the rare collection of Lafreris, the maps of the several engravers, through successive years combined, were printed only in single sheets or introduced as such in scientific works of the most dissimilar character.

The present maps contain four series of illustrations. The first series (Pls. XVII–XX) exhibits, on modern charts, the coasts and inland regions that have been discovered. The second series (Pls. XXI–XXIV) presents to our view the results of the observations of the pilots to whom we are indebted for the production of these maps.

Naturally, with the exception of the Cosa chart, no original surveys could be represented, but they are, on the contrary, copies and transcripts of copies which are extant, a compilation gathered from different sources, so that only the general impression of the ideas promulgated a the time are shown to us. In details, however, and specially in local names, numerous inaccuracies occur.

Finally, the third and fourth series (Pls. XXV–XLV) introduce to us the scientific conclusions of geographers and the inductions of scientists together with established theories in regard to the positions of

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[1] Translated from Dr. A. Petermann's Mitteilungen, 1892. Ergänzungsheft Nr. 106.

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the new, relatively to the known world. Here the originals are, almost without exception, modified typographically, and they are either woodcuts or copper engravings. Copies, however, are introduced of manuscripts and of painted globes. Where single charts, simply marine charts, have been struck off, which, however, but seldom occurs, they are given uncolored and without doctrinal reasoning or scientific significance. For the information of the scholar, which it was necessary to express in the third or fourth series, two series were requisite, partly in order to give an indication of the abundance of the theories, that often changed as suddenly as they arose, and partly with a view to introduce into this history all prominent or representative names.

In order to subjoin to the discoveries as well as to the charts the necessary explanations, inasmuch as they could only be given cursorily and summarily in a map, the second and special part of this paper comprises a history of the voyages of discovery and exploration, and the necessary material for charts, all of which is chronologically arranged.[1] The important points in a history of discoveries are not alone to clearly set forth the more prominent incidents of the earlier voyages, and especially those of Colon, as also the names given to the discovered localities, but likewise to give the sources of evidence, and opportunely, works of critical research. In the course of the sixteenth century the more real discoveries cease, and the more brief, generally speaking, are communications and critical observations. The chronological series of charts that are accessible, in so far as they are geographical, possess a certain value and are given with the utmost completeness possible. Among them the principal works of Harrisse offer the most valid claims to our recognition. I confidently believe that although this series is far from being exhaustive, it will nevertheless be acceptable to those who are interested in the too-little-cultivated history of cartography. The works, too, are cited, as far as known to me, in which the respective charts are to be found, either in facsimile or imitation.

For a critical analysis and appreciation of the charts themselves, and an understanding of their relation one to another, synoptical tables of all the names and legends were requisite, the laborious preparation of which may not appear in a brief statement, but the value of which may be recognized from the few critical observations upon them.

In the third series, charts 1 and 2 revert to a period anterior even to the discovery of America by Columbus, in 1492. These are shown for the purpose of giving expression to ideas and theories on the lines of demarcation of countries which have had decided influence on posterity, such, for example as the Zamoiski codex of 1468 for Northern, and Behaim's Globus of 1492, for Eastern Asia. The questionable Zeno chart of 1380 (?) is included in the appended list,[1] for the reason that after its publication in the year 1558, not merely did the Italian Ptolemäus editions, but even Mercator, as well, follow its delineation of the northern regions.

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[1] This history in detail of the several voyages and of the charts is too voluminous for translation here, covering about eighty pages of Petermann's Mitteilungen.

THE MARINE CHARTS.

The art of designing marine charts originated with the Italians. When the Portuguese Prince Henry began his discoveries he sought to obtain Italians for his enterprises. So likewise in chart design, or drafts, Italians became the instructors of the Portuguese, and with the latter the Basques appeared as skillful mariners and cartographers. Not until toward the middle of the sixteenth century did nautical cartography find its entrance into France. It did not reach either England or Germany at the epoch of the great discoveries. But in Spain, to which is due the most ancient cartography of the most important regions in America, guidance and enlightenment were derived from Italians, Basques, and Portuguese. And thus the material for American cartography consists of Spanish, Portuguese, Italian, and more recently of French charts, or coast pilots. The language of these charts is exclusively Romanish.

But, unfortunately, original drafts are hardly accessible. Unfortunately, also, most of the track charts no longer exist. "What, in the lapse of time, has been preserved from shipwreck, or the hands of the gold-beaters, is as yet not fully ascertained, and very little indeed has been described" (Harrisse, Cabot, p. 139). As often as pictures of the uprising New World vary in the first decades, just so often do the charts become antiquated and dangerous as guides. It therefore became necessary from considerations of prudence or utility to discard or destroy the more ancient. Thus it happens that neither in Spain nor in Portugal is there to be found a chart of America for the first fifteen years of the sixteenth century, with the exception of that oldest map of the world, which was recovered from France, and on which the New World is represented—the noted chart of the Basque pilot Juan de la Cosa. The earliest charts that have been preserved, next to that of Cosa, the marine charts of Canario and Cantero, and that of Kunstmann in his atlas of published sheets, Nos. 2 and 3, are to be found in the collections of Italy, France, and Germany. And even these, collectively, are no longer original, but imitations and compilations collected from various State archives. And although Cosa, in the delineation of America, has pronounced his work as original, his chart upon the whole is merely a compilation.

The elaborate, and in many respects incisive criticism which Harrisse[2] above all others, has devoted to the subject, has enabled us, in special instances to determine what originals were used in drawing some of the chart copies, but it is impossible to say how far original and copy agree with each other. So, also, the oldest manuscripts for a cartographic history of America are not originals, but merely arbitrary combinations of various copies, not drawn from originals of equivalent value, for the value of a first impression on the mind is always dependent upon the intelligence of the pilot. Every copyist is subjected to the risk of committing errors, through a misapprehension, or perhaps through careless haste. And here no connected text is employed, as in the transcript of a literary composition, but individual names without connection or correlation are strung along, like beads, upon the water line of a seacoast. Cosmographers, too, avail themselves in numerous instances of abbreviations in favor at the time, and employed in manuscripts. The points designated along the coast are in some localities so crowded together that errors may readily occur in their repetition, not alone through the misinterpretation of a name badly or illegibly written, but in some cases from its entire omission. And thus the correct reduplication of a series of appellations, so closely written, would be rendered almost impracticable. Besides, if copperplates or woodcuts were designed for charts written upon parchment, the brittle character of the material on which it must be printed would doubtless make necessary a reduction in the number of the local names. It could not be assumed, moreover, that due discrimination had been exercised in the topography of these sheets, and only the less unimportant particulars omitted.

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[1] List not translated.

[2] "Names, when methodically interrogated, yield very useful results, which reach even distant questions." (Harrisse, Disc. of N. America, p. 325.)

The principal share in the explorations made along the American seacoast unquestionably belongs to the Spanish pilots, or to those employed in the service of Spain. But it must in no wise be supposed from this that Spanish influence in the development of the cartography of America has been very considerable. The reverse, indeed, is the case. Spanish cartography, it is true, begins immediately after the first voyage of Colon, and innumerable traces in the literature of the country, and the manuscripts contained in their archives, afford ample evidence of the rapid development among them of the art of sketching and designing marine charts. But despite this fact, the dissemination of this art throughout Spain, and its progress toward northern regions, and consequent influence upon the cartographic conceptions of middle Europe during the first quarter of the sixteenth century, can not be established. Columbus had promised to draw up a chart of the discoveries of his first voyage, and he had held out to their majesties an assurance of its execution on his return home. On the 5th of September, 1493, he was again reminded of his engagement by Queen Isabella (Navarr. II., p. 122., 2d edition, 1859). Meanwhile the court records communicate nothing to us, in respect either to the dispatch of the chart or its receipt. It is proved in several ways that a chart of his third voyage was in existence. Hojeda saw it first at Bishop Fonseca's, and obtained a copy of the chart for his own first voyage (Navarr. III, pp. 539, 586). But of all his charts, not one has been preserved.

The restored chart of Juan de la Cosa, 1500, is, then, the earliest cartographic memorial handed down to us; and in this map the skillful Basque mariner has combined in one exhibit the various Spanish discoveries, and, possibly also, the discoveries of John Cabot in North America.

The incidents of the fourth voyage of the Admiral in 1502–1504 were rapidly disseminated throughout Europe, for not only Columbus himself and his brother Bartholomew, but likewise the other mariners had each designed charts. It might therefore be readily inferred that not merely facts but names themselves might vary in many important particulars. Charts were no mystery, and they might be indiscriminately reproduced, or even acquired by purchase. In Portugal there was a chart industry, and there was an open traffic in them under the restriction, however, that it was forbidden, under a heavy penalty, to draw plans of the route by sea to the Molucca Islands. We thus find that later on an Italian draftsman, Baptista Agnese, contributed, as a supplement to his finely executed collection of maps, a chart of the world, upon which the Molucca route was clearly traced, and it was recognized as such.

When, in 1500, the Portuguese Indian fleet under Cabral discovered Brazil, and when in succeeding years Portuguese vessels had coasted along a considerable portion of the eastern coast of South America, it appears that in Portugal they encouraged the publication of these facts. This was naturally in the highest degree obnoxious to the Spaniards, for at Lisbon copies of the charts were willingly accorded to Italians. It appears further that charts of Cabot's voyages were brought to Lisbon earlier than to Spain. At all events, the explorations of Cortoreal and the earliest received charts of Cantino and Canario had their origin in Portugal. To a wide diffusion of the incidents of his own voyages in Portuguese ships, Vespucci himself contributed, as they were accustomed to say, through picture and narrative; and thus the influence of Portuguese charts, copied by Italians, upon the ideas of Middle Europe was already inaugurated before Spanish cartography was directed into regular channels. The first foundation for the system was laid in the establishment of the Indian office at Seville in 1503. The lead in all transmarine enterprises emanated from the Casa de Contratacion for the Indies. Here were necessarily collected charts of all recent discoveries. But it would necessarily soon become evident that such charts, based upon charts often widely deviating from each other and giving imperfect or erroneous delineations of the coasts in the new hemisphere, would rather expose mariners to danger than afford them security. It became necessary, therefore, to exercise a many-sided critique and careful investigation of the charts accessible, and care be taken that seamen were furnished with the most accurate maps obtainable and designed upon uniform principles.

The progress here indicated was associated with the nomination of Amerigo Vespucci in 1508 to be chief pilot in Spain. The plan was then first conceived of drawing under his supervision an official general map of the regions discovered (Navarr. III, p. 300). Juan Diaz de Solis and Vincencio Yañez Pinzon were associated with him. Of all the charts then in existence that of Andres de Morales was declared to be the best, and it was raised to the grade of an official chart, or royal padron. No mariner was permitted to have on board his ship, under a penalty of 50 doubloons ($240), any other chart. But it was more easy to issue than to enforce such an order.

When Amerigo Vespucci died, on the 22d of February, 1512, Diaz de Solis succeeded him as chief pilot. In the same year, the latter, together with the nephew of Amerigo, Juan Vespucci, received a commission to draw up an official chart. In consideration of this they were each to receive the privilege of copying and selling the royal padron. But other cartographers did not trouble themselves about this privilege. During subsequent years, and up to the period of Diaz de Solis's death, we are informed of several convocations of a junta through which the preparation of an official chart might be expedited, but it seems that many impediments were encountered in its execution. And, in fact, no trace has been preserved of any similarly authorized charts. The question here was an exact determination of the longitude of Cape St. Augustine, in Brazil, according to which it was hoped that the line of demarcation of the Portuguese claims in South America might be definitely adjusted, for the Portuguese were determined to imprison every Spaniard who overstepped the boundary. Incorrect charts, moreover, exposed seamen to imminent peril in that locality.

It has been supposed that Sheets IV and V in Kunstmann's Atlas were promulgated as results of the junta of 1515 (Kohl, Generalkarten, p. 30), for these charts must have appeared subsequent to 1513, inasmuch as Balboa's South Sea is indicated upon them. But these two charts represent two different standpoints. No. IV represents the Portuguese claim in Brazil as proved by the line of demarcation through that country and the long legend upon the Portuguese side, while No. V defends Spanish pretensions, according to which the boundary line recognizes as valid, in behalf of the claims of Portugal, only the extreme projection of Brazil. The first chart employs the medium of the Portuguese tongue; the second of the Italian. The uncertainty as to a comprehensive idea of the new regions lasted only a few years; that is to say, until the shores of the Mexican Gulf were taken up by Pinedo or until Sebastian d'Elcano, of Magellan's squadron, brought home the earliest charts of the southern extremity of South America. Moreover, not until about 1522 or 1523 was the Spanish coast line in America fully determined in the west, through their researches on the broad ocean, as furnished by the surveys of Cortez and Pizarro. And now the idea of a universal official map or "padron" was once more reverted to.

In the year 1526 Ferdinand Columbus received an order to prepare an accurate chart, and this, by a later imperial decree, was to be entitled the "general padron." But when, after the lapse of nine years, a reiterated command was dispatched to the son of the Admiral to complete the work, it must not be concluded that up to that period he had not executed the commission or supplied any map whatever. Nor does this entirely justify the assumption that the Weimaraner general chart of 1527, the first general map, originated with him. The second, designed by Ribero, and the general map of 1527, and that of 1529, essentially altered, have both likewise been preserved. The approved type exhibited in each of these charts was henceforth as a general rule steadily adhered to.

Though the Portuguese occupy a subordinate rank as regards the extent of their contributions to the cartography of America, the distinction is assuredly due them of having first conceived and portrayed the continent of North America in its correct and proper contour, exclusive, of course, of the polar regions. They were able pilots and expert draftsmen, and not only by their labors, but by their methods, they have exercised a vast influence, especially upon geographical works in Germany. Many of their pilots and draftsmen emigrated secretly from Portugal into Spain and entered into the service of Charles V. Such, for example, were Francisco and Ruy Faliero, Jorge and Pedro Reinel, and Simon de Alcazaba de Sotomayor. Along with these, and even to a greater extent than the latter, Italians emigrated to Spain. Only Columbus, however, with Amerigo and Juan Vespucci, are here mentioned (Harrisse, Cabot, p. 219). Two of the earliest and most important cartographic records, the charts of Cantino and Canerio, although supplied or drawn by Italians, are copies of Portuguese originals. Both of these, as also the surveys of the coasts of the New World sent to the Duke Réné of Lothringen, had a far-reaching influence upon scientific cosmography.

This influence, however, emanates from Italians residing abroad. Harrisse calls attention to the fact (Discovery of North America, p. 270) that cartographers living in Italy only recently, comparatively, took notice of the discoveries of Spaniards and Portuguese in the New World, and with the exception of Johann Ruysch, a German, who copied in its essential details a Portuguese map of the New World for the Roman Ptolemäus of 1508, the Viscount di Maggiolo was the first who brought to Naples a representation of the newly discovered regions, in 1511. Cartographic activity in Italy, up to the year 1527, remained dependent upon Portuguese exemplars. Spanish influence is first detected in Maggiolo's chart of 1527. The French took part in these nautical and cartographic enterprises much later than the three southern Romanish nations—the Italian, Spanish, and Portuguese. Here, too, an Italian, Giov. Verrazzano, in 1524, was the pioneer. The voyage of the first Frenchman, Jacques Cartier, followed ten years later, and although none of his original drawings have been preserved, the results of his first voyages of discovery shown upon the chart of the world by Nicolas Deslien of Dieppe, 1541, constitute the oldest French cartographic publications known to us. The latter is preserved in the Royal Library at Dresden.

But it was no longer possible for French cartography to exert a decided influence; on the contrary, their cosmographers showed themselves dependent, in many respects, upon Germany. The earliest marine chart, in a modern sense, in nautical use, the celebrated map of the world by Mercator, appeared in 1569, and consequently at the close of the period here under discussion. The uncertainty which prevailed for a decade in the delineation of the newly discovered coasts was chiefly due to inexact astronomical calculations. Calculations of latitude were naturally more easily determined than those of longitude. And when it is remarked that in the middle of the New World and in West Indian waters, where alone the Spaniard was enterprising, vacillation prevailed longest, while north and south, in Newfoundland and Brazil, whither in the same year, 1500, came Portuguese vessels, long before the geographical latitude was clearly determined, we necessarily reach the conclusion that the Portuguese were greatly in advance of the Spaniards in their nautical skill and ability.

Columbus himself did not rise above the companions of his voyages in knowledge and address. Information which comes to us, secondhand, of his observations of latitude betrays a vacillation and hesitancy between his own tendencies and the chart of Toscanelli, which he blindly followed. H. Harrisse in his latest work (Discovery of North America, p. 401), adopts, however, the conclusion of Humboldt, that Columbus did not have on board a chart of Toscanelli, for he would otherwise have crossed the ocean under the parallel of Lisbon. I consider, however, this assumption as untenable, for the rich territories of Eastern Asia, the goal of his western voyages, must first be sought in the torrid zone, or in the vicinity of that zone; and it is questionable whether it would not have been more advisable to navigate seas that were known, those for example, from Spain to the Canaries, on the borders of the Tropics, than to seek a fresh route thither on the unknown waters of Eastern Asia. In the second place, according to the chart, as may be seen on Behaim's copy, two very desirable anchorages were to be anticipated at Antilia and Zipangu, on the western route, from the Canaries to Zayton, under rather similar conditions, whereby a sea voyage of indefinite length was broken in a very welcome manner. In the third place, it is manifest from the daybook of the Admiral that he hoped to reach these points. Antilia he desired to visit upon his return voyage, since he did not find it precisely where he supposed from his chart he ought to have found it, and Zipangu he believed he had discovered on reaching Haiti. All the observations of the discoverer respecting his ideas of the division of land and water are intelligible through this chart. And lastly, due weight should be given to the highly important testimony of Bishop Las Casas, which, in view of its manifold repetitions, should not be treated as a common error, as is sometimes the case with his statements.

Las Casas (Lib. I, chap. 12, Bd. I, p. 96) having referred to the geographical error of Toscanelli, through which, in a western voyage, the territories of the "Grosschans" were first touched upon (remarks which, in an abbreviated form and in part also verbally, are again met with in the histories, Chap. VIII[1]) the Bishop adds some significant paragraphs to this, which are omitted in the histories, being somewhat equivocal as affecting the reputation of the Genoese: "La carta de marear (Toscanelli) que le invió, yo, que esta historia escribo, tengo en mi poder, y della se hará más mencion abajo." (The marine chart which I sent to him, I, who am writing this history, hold in my custody, and about which further mention will be made below.) And a few lines farther on he adds: "Y ansi creo que todo su viaje sobre esta carta fundó." (I believe also that his [Columbus's] entire voyage was based upon this chart.) Then Las Casas again returns to the chart in his narrative of the first passage across the ocean, when Columbus, on September 25, 1492, withheld the marine chart of Martin Alfonso Pinzon, while borne onward upon the ocean waters which they were then navigating. It was a question of the precise situation of Antilia. Here Las Casas remarks, in chapter 38 (p. 279): "Esta carta es la, que envio Paulo, fisíco, el Florentin, la cual tengo en mi poder." (This is the chart which the Florentine physician [Toscanelli] sent, whom I hold in my power.) Toscanelli's chart was held in high estimation by Columbus. Of this there can exist no doubt, for no other chart was obtainable that exhibited the entire ocean as far as the coast of Asia. He must have had the Toscanelli chart on board, for he could have guided himself by none other, and he piloted his course solely by this chart.

The uncertainty of the latitudes, which I ascribe to the influence of Toscanelli, can even be recognized in a chart handed down from very early times. It is Table II in Kunstmann's Atlas. Here the shores of the Greater Antilles extend from Puerto Rico to Cuba, and directly onward to the northwest, so that the northwestern extremity of Cuba reaches the fiftieth parallel of latitude. Such errors disappear gradually, and not until after the death of Colon, and by degrees only, does the tropical circle assume its proper position relatively to the Greater Antilles. The correct delineation of the chart does not come to us until it is first exhibited in the general map of 1527. On the other hand, the mouth of the Amazon was correctly placed, from the first, under the equator. The eastern projection of Brazil, Cape St. Augustine, appears early in its proper situation. Far more difficult than the latitude was the determination of the longitude. They could not then reckon astronomically. It was much easier to ascertain the dangerous character of the coast through an estimate of the rapidity of the passage. But that even here opinions differed may be perceived from the varying estimates of pilots on the occasion of the first voyage of Colon. His own observations or calculations of latitude are no better than those of his contemporaries. Nor do I believe that the few astronomical efforts that were made to determine the longitude on American soil have had any influence upon the maps. It is therefore not to be wondered at that the eastern shores of the New World, namely, South and Central America, should be removed 3 to 5 degrees too far toward the east. Things were even in a worse state in the beginning in the case of North America. The insular-like appearance of the shores of Newfoundland, Labrador, and Greenland (?) scarcely permit us, at first, to devine their actual character. The eastern coast of the present United States was quite delusive, extending horizontally from west to east, as if the ocean were quite dammed off on the north. As a necessary sequence, Newfoundland lay about 40 degrees too far to the east. These errors had undergone hardly any correction during the sixteenth century.

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[1] I say designedly "again met with," for I consider here Las Casas as the original and the one upon which the historians have drawn.

The line of demarcation, decided upon since 1494, frequently served on the general charts as an initial meridian. We first meet with it on Sheet IV, in Kunstmann's Atlas, and consequently somewhere about the year 1518. It here lies 21 to 22 degrees westward from the Cape Verde Island Santo Antonio, and hence 370 leagues remote from it, as was settled in the convention of Tordesillas in 1494. But Spanish cosmographers wished to remove it as far as possible to the east, in order to lessen the domains of Portugal. They were unable to come to a full settlement of this point. The old charts, whether of land or sea, track charts, or maps multiplied by typography, could alone supply a scientific desideratum where the date of restoration is clearly indicated by the compiler, and when, moreover, an exact computation of the time is made, or where this date may be ascertained with reasonable probability from the text. The greater portion of the old cartographic records that have been preserved are without date.

Of the twelve oldest sheets that we possess from the year 1500 to 1509, four are dated and eight are without date. We may regard it as a great piece of good fortune that the oldest chart of Juan de la Cosa that has been preserved bears a precise date, and that to the so-called Cantino chart a definite year may be ascribed with confidence through the letter that accompanies it. In other cases a determination of the time of a chart without date is always an extremely difficult problem.

It is true that in many instances it is possible to verify which are the most recent discoveries recorded, but it follows necessarily from this that the chart could not have been delineated previous to the fact of its discovery. On the other hand, it can not be perceived after how long a space of time later on the cartographer executed the draft. If no one of the cartographers who were residing in Italy prior to 1508, or, more correctly speaking, anterior to 1511, take any note of America, such a fact should only counsel the exercise of extreme caution.

Inasmuch as with but few exceptions none of the original drafts have descended to us from remote times, and since the labors of successive pilots have been collected, for various years, into one general map, the difficulty of ascertaining the exact dates has been greatly increased. And yet, in the case of the port entry records, which were made up in the seaport towns, it is more easily established than through the sheets subsequently printed. The execution or engraving of the sheets required considerable time, the printing was often retarded a year or more, and all this must be weighed with the possibility that the latest designs were not always at the disposal of the scientist from whom these charts emanated. It thus happens that such sheets, without any date, were begun too prematurely. It is well ascertained that designs for the Ptolemäus charts (Strasburg, 1503) were six years at least in the hands of the college authorities at St. Dié before they were issued. And, moreover, Duke Renatus (deceased in 1508) had come into possession of the new marine charts of South America and South Africa, which, at a later period, are said to have embellished the Ptolemäus editions, although only in woodcut; and Martin Waldseemüller announced, in 1507, in a letter to Amerbach, St. Dié, of the 5th of April, that the charts would very soon appear in print.

The first known globe executed by Nordenskjöld presents another illustration of this (facsimile atlas, Table XXXVIII). The origin of this globe, Nordenskjöld thinks, may be traced to the years 1510 to 1515, while Harrisse has proven by an inscription discovered in Haiti that we should not assign a date earlier than 1518 to the appearance of the globe.

In the same way the date of a chart of the world, designed by Descalier, the so-called chart of Henry II, was antedated by a year, until the inscription with the date itself was discovered upon the original. If, in the catalogue[1] of known charts, the figures of the year, in the case of charts without date, are definitely or approximately given, these figures should always be received with reserve, though I have always endeavored to follow only the most approved authorities.

In the study of marine charts another difficulty arises, where it is a question of identification or determination definitely of the old names and reconciling them with the existing local appellations, for only a portion of the names given by the discoverers themselves have been retained up to the present time. Many of them likewise have been modified, mutilated, or supplanted by other appellations even during the lifetime of their sponsors. The Spaniards ignored the distinctions of the Portuguese, and vice versa. Nay, more than this, of one and the same marine expedition varying or widely differing charts might be brought home by different pilots, and if upon these originals the names were abbreviated or illegibly written not inconsiderable discrepancies would necessarily arise in the first copies. The interpretation of the names, moreover, is fraught with the difficulty that discoverers have rarely given an exact description of the coasts in their written reports, for only very seldom indeed, as in the case of Columbus, are the ships' logbooks or even an epitome of them accessible. The reports, also, are not infrequently too vaguely or generally recorded—as, for example, in the four voyages of the two Vespuccis—to afford any medium for their correct interpretation. The description of the localities also often presents wide divergencies. As the signification or correct interpretation of the local names is often obscure or unintelligible, it is natural that to fresh inquiries an elucidation of these details is often embarrassing.

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[1] Catalogue not translated.

According to H. A. Schumacher's communication (Kohl's American Studies, in the German geographical sheets, Bd. XI, p. 106, Bremen, 1888), J. G. Kohl writes concerning the old charts, in which he had for years earnestly interested himself: "One is to be cautioned against a too indiscriminate use of these things. As a matter of course the charts assume to give a correct representation of the countries in their more prominent features, as the author proposes to himself at the moment of their execution; but the operation of delineating charts, which should properly have been the work of only cultivated and learned minds, was often confided to very inexperienced hands, and was conducted in part in an extremely negligent manner, while the draft of a chart, correct in all its details, presupposes so extraordinary a mass of information, that it was impossible to meet all its requirements until in more recent times; and not until in more recent times was all this knowledge combined and attainable in due form."

Now all this may be readily conceded, and yet we are constrained, where it is a question of the development of cartography, as in the case of America, to consult and investigate closely the most insignificant sheet, and we must at all events endeavor to obtain a clear elucidation of each of the names. But unfortunately it is hardly practicable to determine with confidence, in the case of many of the important voyages of discovery—as, for example, those of B. Gomez, Ayllons (in spite of the Spanish chart of a Ribero)—what points of the coast are indicated under the old designations, or in what locality a landing, or possibly a settlement, has been effected.

If not for the determination of the local names, at all events for that of the dates of discovery, the saints of the Catholic Church are of great utility. The day of the discovery is hereby conclusively established, and in accordance with this it may not infrequently be demonstrated that a discovery should not be credited to a sea captain whose voyage harmonizes with the year but not with the month to which it is accredited.

It may be profitable and useful in investigations relating to this subject to annex here an alphabetical list of the saintly names most frequently in use.

Names.	Date.	Names.	Date.
Alexius	July 17.	Hyacinthus	
All Saints	November 1.	Hieronymus	September 20.
Ambrosius	April 4.	Jacobus	July 25.
Andreas	November 30.	Januarius	September 19.
Anna	July 26.	Jacinto	September 11.
Annunciatio Mariæ	March 25.	Johannes Baptista	July 24.
Antonius	January 7.	Julian	February 27, 28.
Appolonia	February 9.	Exaltatis	September 14.
Ascensio Domini	Himmelfahrt.	Laurentius	August 10.
Ascensio Mariæ	August 15.	Lazarus	December 17.
Assumptio St. Johannis	December 27.	Lucas	October 18.
Assumptio Mariæ	August 15.	Lucia	December 13.
Augustin	August 28.	Louis	August 25.
Balthazar	January 4.	Louisa	March 2.
Barbara	December 4.	Magdalena	July 22.
Bartolomeus	August 24.	Margaret	July 13.
Beata	December 22.	Maria	September 8.
Benedictus	March 21.	Martha	July 29.
Bernhard	May 20.	Martin	November 11.
Blasius	February 3.	Martyrs	June 22.
Bonaventura	July 14.	Matthew	September 21.
Bonifacius	June 5.	Matthias (in leap year, February 25).	February 24.
Catherina	November 25.		
Christoph Cristoval	December 18.	Michael	September 29.
Circumcisio Domini	January 1.	Nativitas Christi (Navidad Natal).	December 25.
Clara	August 12.		
Conceptio Mariæ	December 8.	Nicolas	December 6.
Crucis	September 14.	Omnium Sanctorum	November 1.
Dionysius	October 9.	Pantaleon	July 27.
Dominica-Sunday		Paulus	January 25.
Dominicus	August 5.	Peter-Paul	June 29.
Eleven Thousand Virgins	October 21.	Petrus	August 1.
Elias	July 20.	Philippus and Jacobus	May 1.
Epiphany (Three Kings' Day).	January 6.	Raphael	October 24.
		Rochus	August 16.
Ferdinand	January 19.	Romanus	August 9.
Franciscus	October 4.	Sebastian	January 20.
Gallus	October 16.	Severninus	Aug. 26-Oct. 23.
George	April 23.	Stephanus	December 26.
Germanus	July 31.	Thomas	December 21.
Gregorius	March 12.	Trinitas (Trinidad)	Sunday.
Holy Three Kings	January 6.	Triumfo de la Cruz	July 16.
Helena	August 18.	Vincentius	January 22.

Besides these saintly names, which for the most part fall upon their feast days, though occasionally on a proximate date, the nomenclature of the old maps consists only of characteristic symbols of the coasts visited and first taken possession of. The usual names are as follows:

Aguada	watering place.	Bahia	bay.	Rio dolce	sweet river.
Aldea	village.	Fondura	deeps.	Rio salado	salt river.
Arenas	sand banks.	Furna	creek.	Rio escondido.	concealed river.
Anegadas	swamps.	Mar baxa	shallows.		
Ancon	bay.	Medanos	hills.	Rio verde	green river.
Arboledas	forest.	Plaia	flat coast.	Salinas	salt beds.
Arecifes	ridges.	Pracel	shoals.	Tierra llana	plains.

Similar general distinctions in reference to the character of the coast, singularly enough, may be found upon charts, engraved or woodcut; that is to say, where they are true copies of marine charts.

The woodcut is the most brittle of all the substances employed, but it came in use in all German charts. And here distortions of names most readily occur, as well as limitations in the manner of representing the prominent local features. The woodcuts fronting the marine charts are inferior and rough, and reflect only imperfectly the information obtained. Yet such a merely general index as bahia has become a symbol of recognition for a whole collection of maps. The well-known Bay of All Saints, on the coast of Brazil, was converted into Abatia of the Saints, through the general distortion of names, and afterwards into Abbey of all the Saints. It was in the German cosmography, beginning with the Waldseemüller charts of 1513, that the remarkable error first appeared, which was more widely spread by Schöner (Harrisse, Discovery of North America, p. 275).

THE TERRESTRIAL CHARTS AND GLOBES.

It deserves to be particularly emphasized that in those countries to which we are chiefly indebted for discoveries in the New World, no cosmographic science existed; that in Spain and Portugal no globe has been produced, and only very rarely has a woodcut come to light.

What position the newly discovered islands—for of such the North American regions apparently consisted—and also what situation the great continent occupied on both sides of the equator relatively to all other parts of the known world; whether the new country was to be included with Asia in a broad signification, or whether connected with Asia at all; whether what is now called North and South America stand in any correlation to each other—all these questions were discussed in Germany and Italy, and more recently in France, but neither in Spain nor Portugal. Various opinions and doctrines in reference to these points arose and environed the gradual evolution of the new hemisphere.

This first geographical development of scientific inquiry had gone forth from Italy with the resuscitation of the "Ptolemäus." German astronomers and mathematicians were once more seated at the feet of the ancient Alexandrine geographers. For this reason the charts first printed are, almost without exception, closely allied with the rapidly succeeding editions of the Ptolemäus. In accuracy of drawing and copiousness of nomenclature, the Italian editions far exceeded the German, for here we find the copperplate. In Germany, on the other hand, the woodcut predominated in the restoration of the charts. It was indeed a unique apparition that in the Romish edition of the Ptolemäus of 1508 a map of the New World by Johann Ruysch should present itself. Five years later on appeared the Strasburg Ptolemäus, that being the earliest chart of the new continent executed beyond the Alps. In the interim, however, globes carved in wood had made their first appearance.

Notwithstanding the inferiority and brittle nature of the materials used in the reduplication of charts, Germany won from the first an acknowledged supremacy in the delineation of the contours of transatlantic regions, and it continued to exercise this influence, uncontested, for a full half century. The reason for this is a very remarkable one. A small Vosges town, St. Die, the seat of the Lothringen Duke Renatus, who died in 1508, acquired the foremost prominence in the development of the cartography of America. Portuguese marine charts and the reports of the four sea voyages of Amerigo Vespucci possibly gave the first impulse to this art in 1506. The news brought to the Duke was quickly appreciated in the halls of the Gymnasium College, to which Walther Lud, Ringmann, and Waldseemüller were attached. The four marine voyages, in a Latin version, soon appeared, accompanied by a "Cosmographiæ introductio," or preliminary initiation in the principles of cosmographic science, by Waldseemüller, in which the author, as is well known, in 1507 proposed the name America for the new continent. At the same time it was decided to convert the marine charts, which had just reached the Duke, into a fresh edition of the Ptolemäus. The restoration of the charts was placed in the hands of Waldseemüller, but after many delays the work at length appeared in 1513. How well this edition succeeded may be recognized from the fact that in 1520 a second impression became necessary, and the editions of 1522 and 1525, imitations of the charts of the same locality, and even the Ptolemäus editions of Lyons in 1535, and of Vienna in 1541, were reproductions of the charts of Waldseemüller.

St. Die, however, soon lost its prominence after the departure of Waldseemüller. His Ptolemäus certainly appeared in Strasburg. Nuremberg succeeded Strasburg with the globe of Schöner, and thus an interest in cosmographic works extended more and more over German territory until its acme was reached at the close of the era in the Netherlands and on the Lower Rhine in the writings of Mercator.

If we now take a retrospective glance at the period when German cosmographers dominated in cartographic designs, from 1508 to 1569, several types, partly contemporary and partly subsequent, reveal themselves, and acquire prominence in the representation of the newly discovered regions of the globe.

In the interval of time here indicated seven different types may be distinguished:

(1) Johann Ruysch, 1508. In North America the well-known countries of Greenland, Labrador, and Baccalaos (Newfoundland) are

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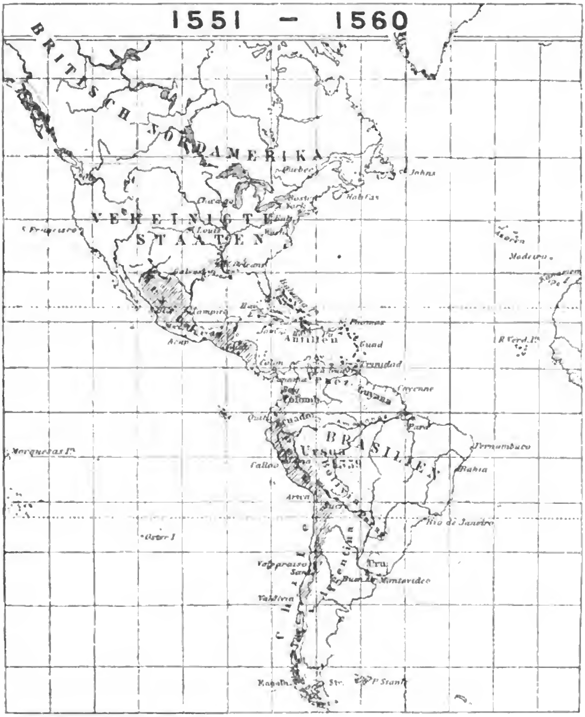
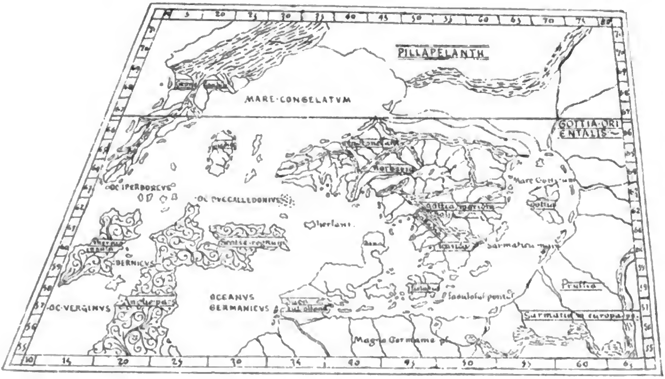
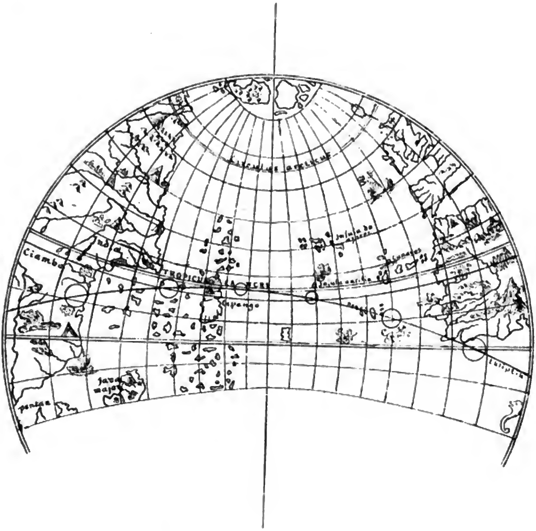


AMERICAN COASTS AND INLAND REGIONS DISCOVERED FROM 1551 TO 1560.

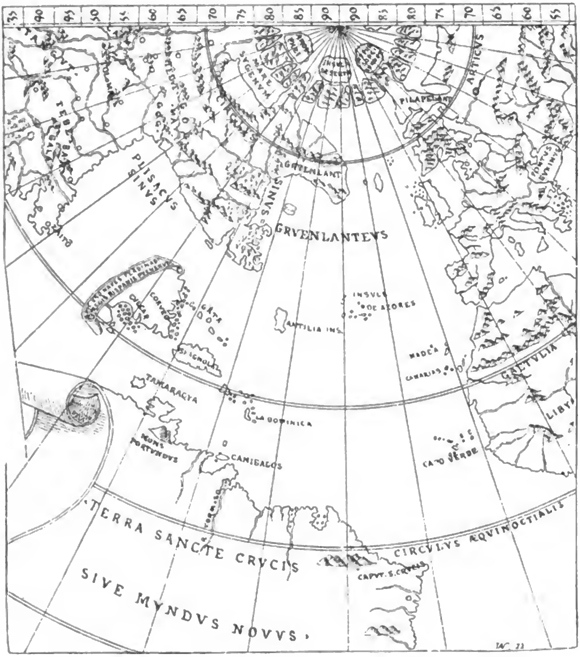
(Exhibit on modern chart.)



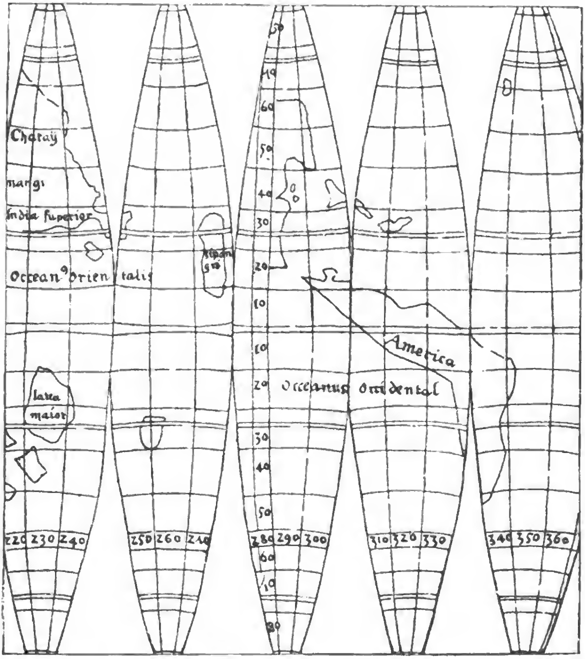
ZAMOISKI CODEX, 1467.



MARTIN BEHAIM GLOBE, 1492.

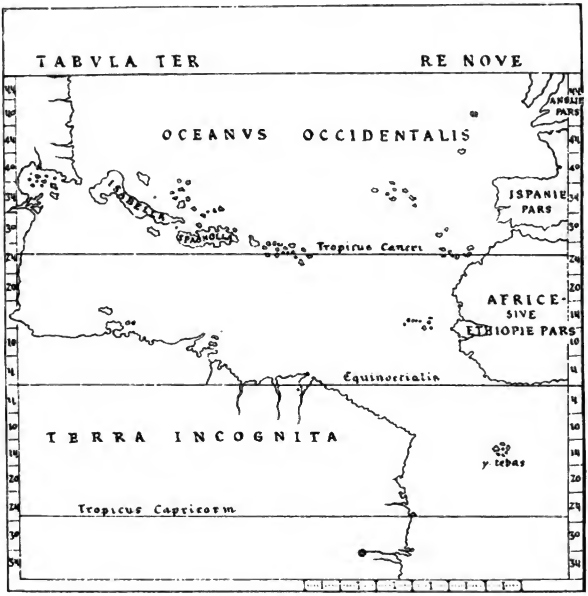


RUYSCH (IN PTOLEMY), 1508.



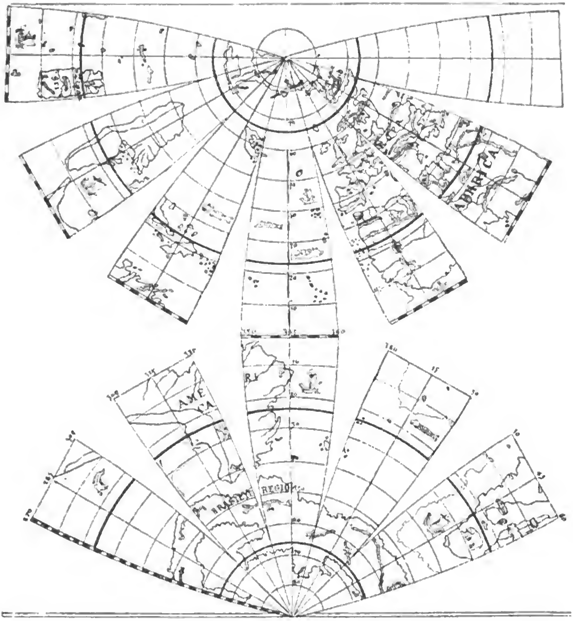
WALDSEEMÜLLER (?), 1509.

PLATE XXVIII.



TABULA OCEANI OCCIDENTALIS SEU TERRÆ NOVÆ
PTOLEMÆUS, ARGENTINÆ 1513.

WALDSEEMÜLLER, 1513.



SCHÖNER'S (?) GLOBE, 1515.

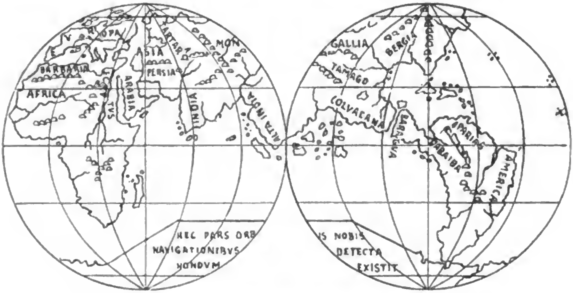


FIG. 1.—FRANC. MONACHUS. 1526.

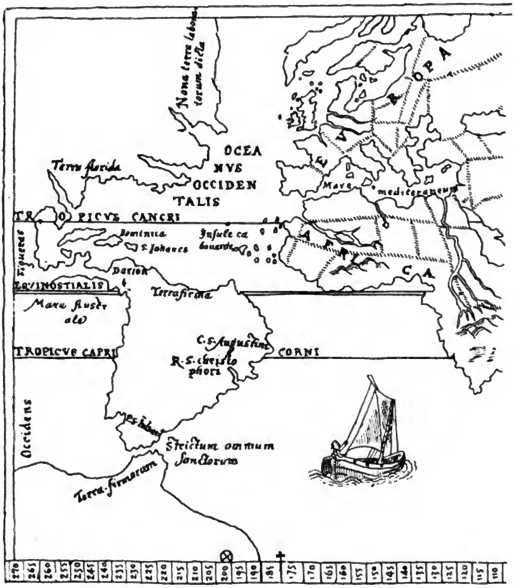


FIG. 2.—THORNE, 1527.

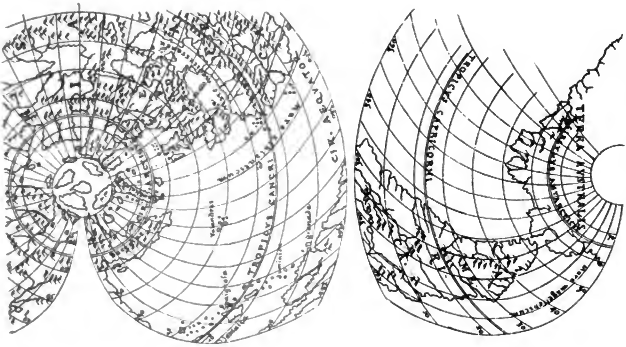


FIG. 2.—ORONCE FINÉ, 1531.

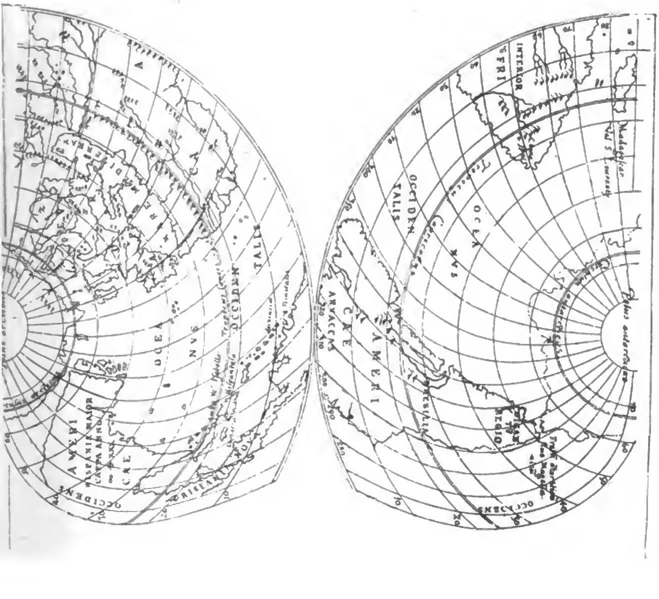
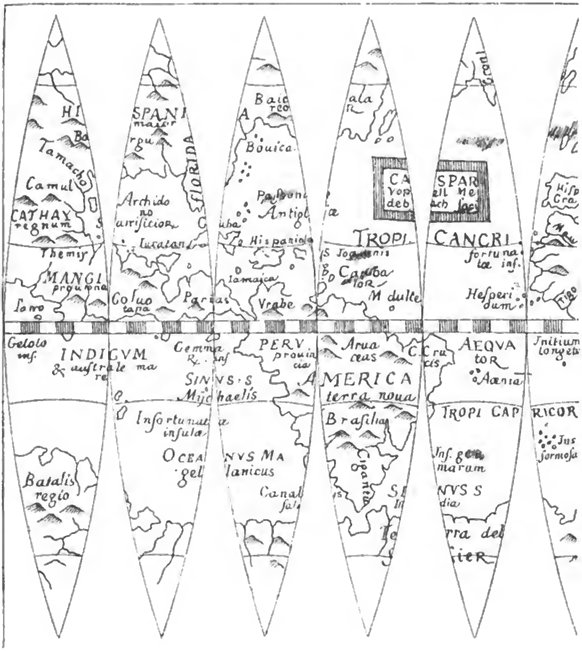
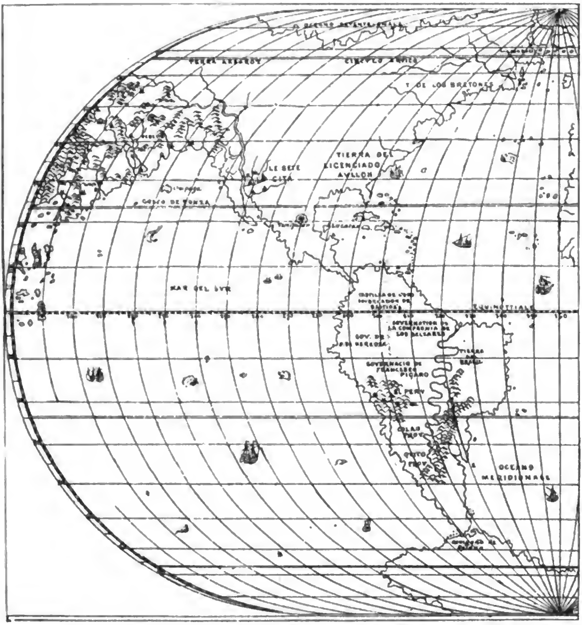


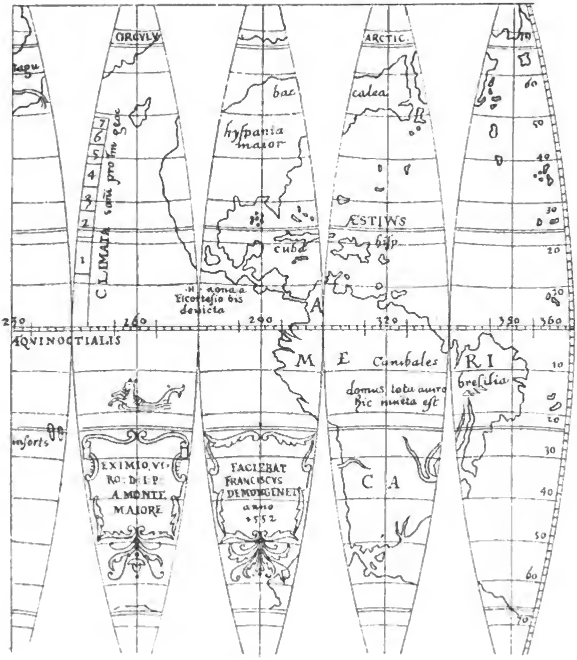
FIG. 1.—GERARD MERCATOR, 1538.



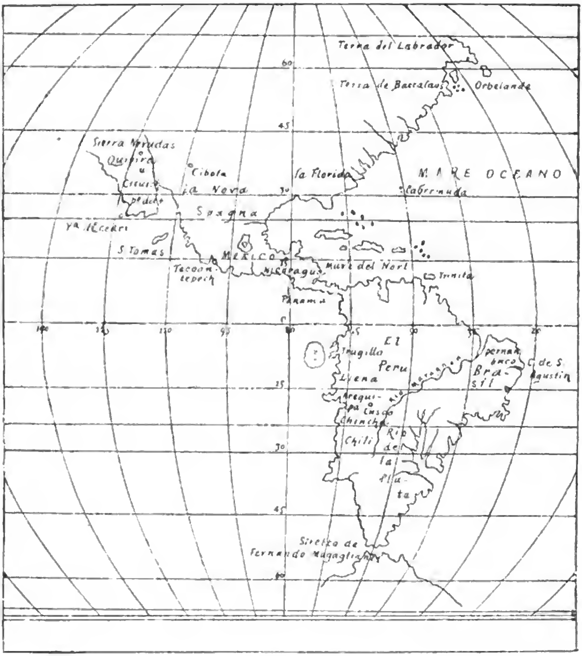
CASPAR VOPELL, 1543.



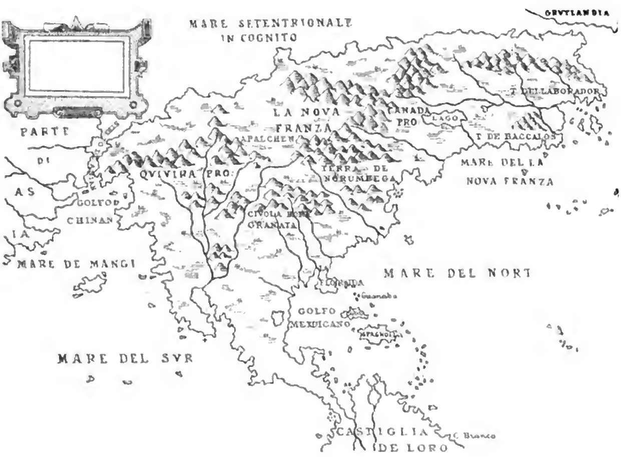
J. CASTALDI, 1546.



DEMONCENET, 1552.

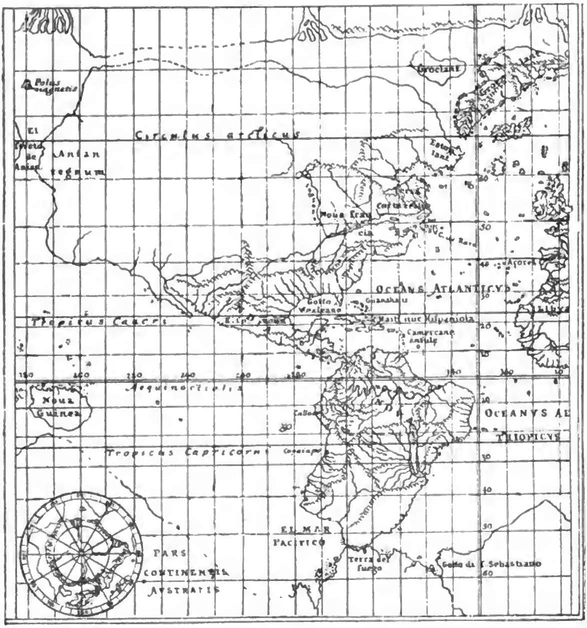


RAMUSIO (III), 1556.



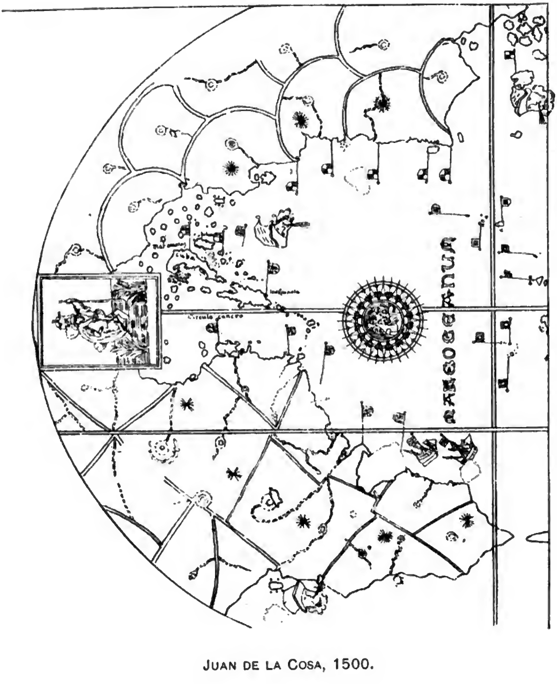
ZALTIERI, 1566.

PLATE XXXVII.

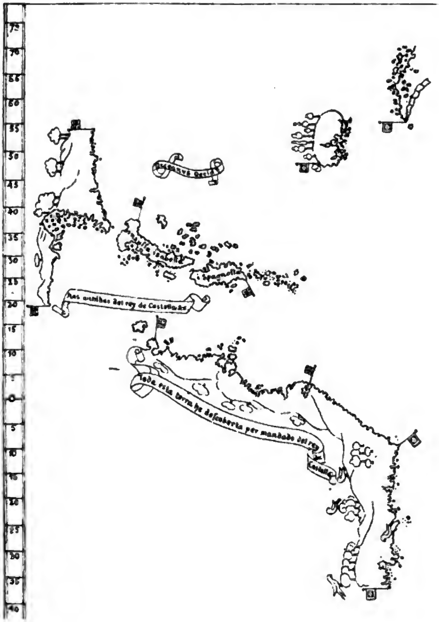


C. MERCATOR. 1569.

PLATE XXXVIII.



JUAN DE LA COSA, 1500.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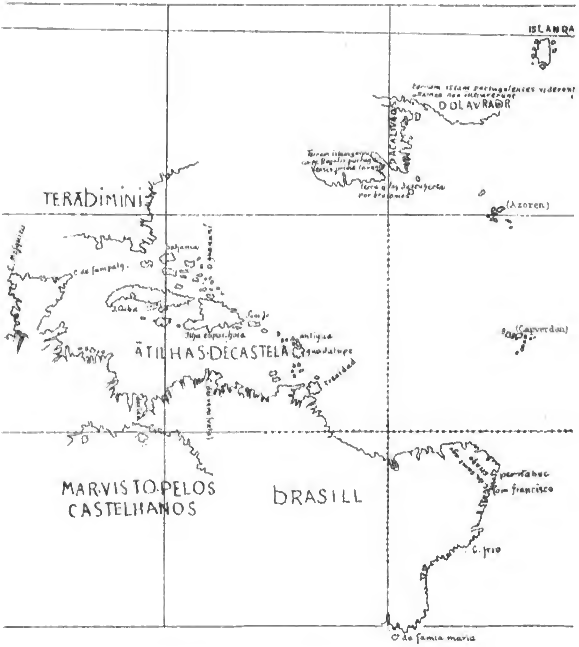
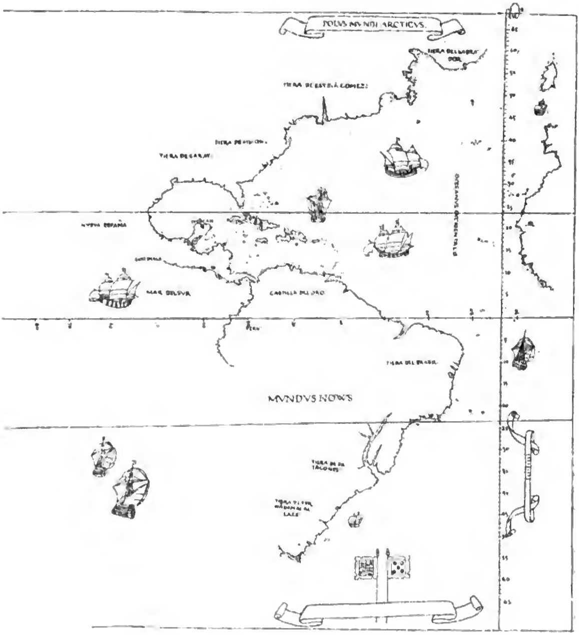
Isabella
i Spagnolla
Las antilhas del rey de Castella
Toda esta terra he descoberta per mandado del rey de Castella

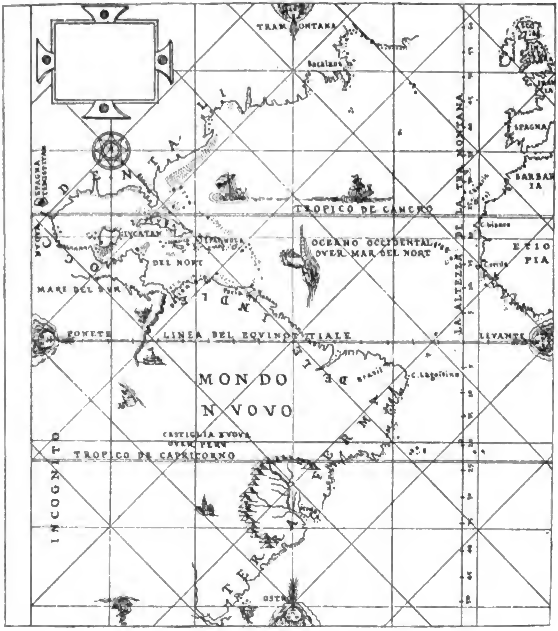
CANERIO, ABOUT 1502.



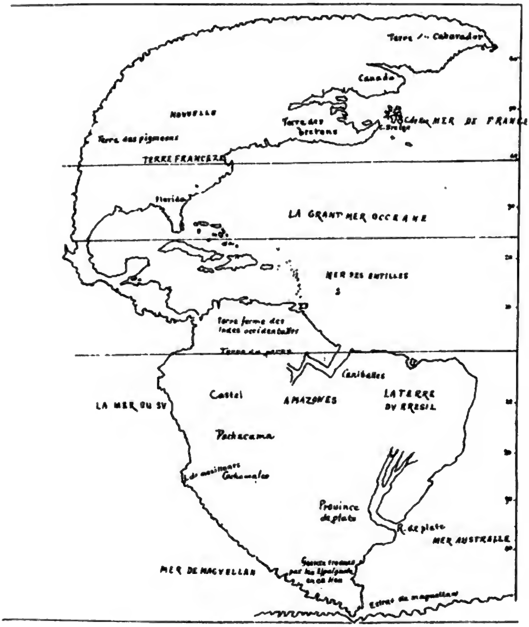
PORTUGUESE MARINE CHART, 1520.



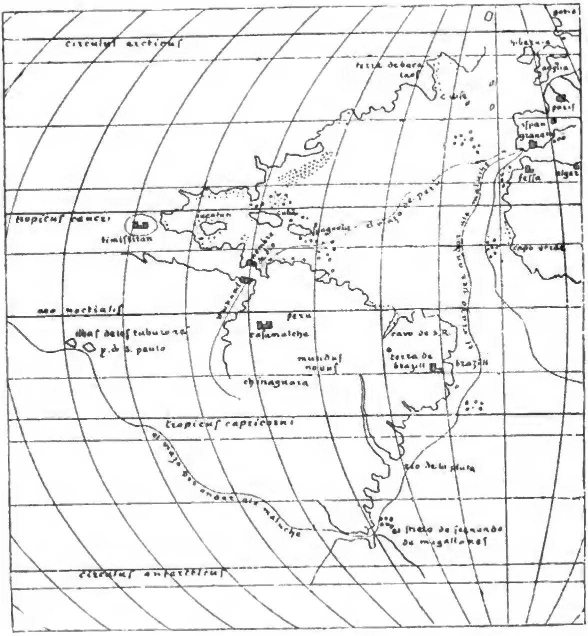
DIEGO RIBERO, 1529.



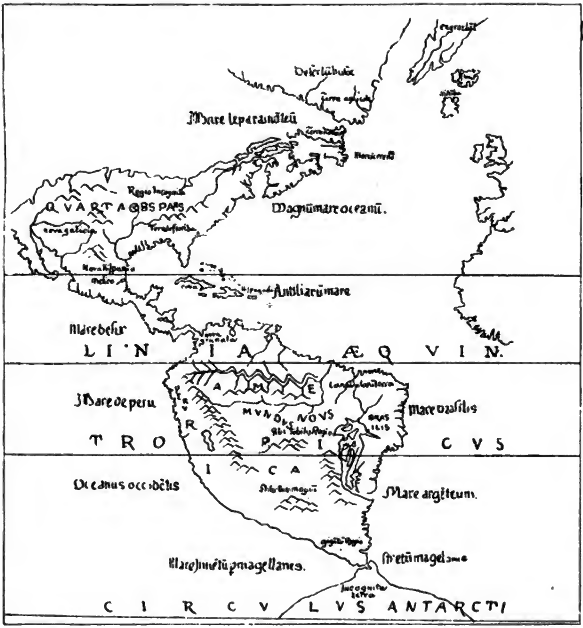
PETER MARTYR, 1534.



NICOLAS DESLIENS, 1541.



BAPTISTA AGNESE, 1550.



DIEGO HOMEM, 1568.

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